

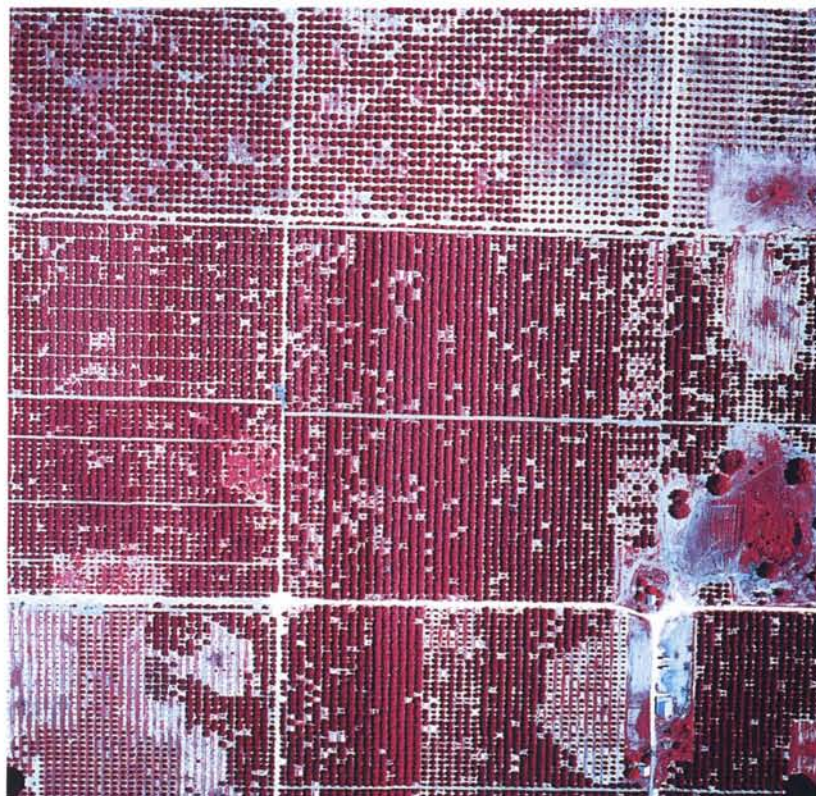
## Citrus Inventory

**F**ifteen years ago, Florida's Charlotte County appraised the value of its citrus groves by physically counting every individual tree on its 8,000 acres of groves. It took seven months if all went smoothly, and it was costly. Now the county has 25,000 acres, but it can do the job more economically in less than seven weeks, thanks to infusions of aerospace technology over a period of more than a decade.

The application of advanced technology to citrus grove mapping began in 1982 when Charlotte County Property Appraiser Oliver Lowe, looking for a faster, more economical way of appraising citrus groves, adapted an aerial color infrared (CIR) mapping system originally developed by Kennedy Space Center (KSC), to the job. This system enabled more accurate property valuations while reducing the county's appraisal costs. At **right** is a sample of a CIR aerial photo from which analysts can extract a great deal of information; it shows, for example, areas where trees were destroyed by insects, were replanted but are not yet fully productive, and other trees that are dead or damaged and therefore should not be counted as income producing property.

Subsequently, Charlotte County enlisted the aid of Dr. Carlos H. Blazquez of the University of Florida's Citrus Research and Education Center (CREC). Blazquez in turn sought KSC's help in advancing the technology. That led to joint KSC/CREC development of a dual video system consisting of paired color video cameras connected to side-by-side monitors; this made it possible to view images of the same area simultaneously and detect changes that occurred from one year to the next.

The Florida State Department of Revenue became interested in the Charlotte County appraisal technique and proposed another advancement: an image analysis system, based on NASA technology, that could automatically survey and photointerpret grove images. KSC's Technology Transfer Office awarded a contract to Dr. Blazquez to adapt a prototype system that would automatically count trees and report a total of trees for a block or grove. Subsequently, NASA, Charlotte County and five



other Florida counties co-funded a technology demonstration of a computerized tree-counting system. The technology was successfully demonstrated in 1992 and in 1993 it became operational in Charlotte County.

According to Charlotte County officials, the CIR/image analysis system offers advantages in time savings, reduced equipment and maintenance costs, availability of permanent historical records, accurate tree counts and dollar savings to taxpayers. The system has potential beyond citrus grove valuation; the officials concluded "We have every reason to believe that the concept may be applied successfully to larger acreages and to crops other than citrus."